

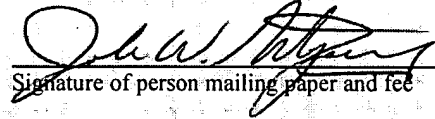
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**NESTED TOYS DEPICTING LIKENESS OF CELEBRITIES AND SPORTS
PERSONALITIES AND MANUFACTURING METHOD**

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NESTED TOYS DEPICTING LIKENESS OF CELEBRITIES AND SPORTS PERSONALITIES AND MANUFACTURING METHOD

Related Patents and Applications

[0001] The present application is a continuation-in-part of a co-owned US provisional application titled "Nested Toys Depicting Likeness Of Celebrities And Sports Figures And Method Of Manufacture" filed January 16, 2003, Serial Number 60/440,482 and is a continuation-in-part of a co-owned US provisional application titled "Manufacturing Method For Nested Toys Depicting Likeness of Celebrities and Sports Figures" filed January 21, 2003, Serial Number 60/444,361 that are incorporated herein by reference and relied upon for priority and for all other legitimate purposes.

Field of the Invention

[0002] The present application is related to toys and in particular to nested wooden toys depicting the likeness of celebrities and sports personalities.

Background of the Invention

[0003] It has become popular to make toys, buy toys, collect toys and play with toys that are in the form and likeness of celebrities, cartoon characters and sports personalities. In the past it was once popular to make and play with nested dolls sometimes known as "Russian dolls." These nested dolls were made of two rounded

hollow wooden shell halves, snugly fitted together at a middle part-line to form the general shape of a figure. An artistic rendering or depiction of people, soldiers, children, animals, and other fanciful characters or objects was painted on the exterior surface of each shell. The nested characteristic was accomplished by making each hollow shell the same general shape as the next and smaller than the next so that one figure was contained in the next bigger figure. An entire group of several similar or thematically related figures could be nested together into one. The entire group could be separated by opening them along the midline and then reconnected to form an entire group of soldiers, a family people, a family of animals and etc.

[0004] Part of the charm of the prior nested dolls was that each was hand painted and each individual doll could have unique features when painted by different artist or even when hand painted individually by the same artist. Thus, each set of nested dolls might be different from each other set.

Summary of the Invention

[0005] The present invention provides nested toy figures depicting likeness of sports personalities or other celebrities and a manufacturing method for producing such nested toy figures.

Brief Description of the Drawings

[0006] FIG. 1 is a side view of a molded pressed wood and resin shell of a nested toy figure, prior to applying a depiction of the likeness of a sports personality or other celebrity;

[0007] FIG. 2 is a front view of the molded pressed wood and resin nested toy figure of FIG. 1, prior to applying the color likeness of a sports personality or other celebrity;

[0008] FIG. 3 is a perspective view of an open pair of mold halves, showing cavities in the bottom half and projections in the top half, for pressing wood powder and resin to form top and bottom portions of water resistant nested toy figures;

[0009] FIG. 5 is a front view of the pressed together mold halves of FIG. 3, schematically depicting pressure and heat applied to cure or vulcanize the wood and resin to form water resistant nested toy portions;

[00010] FIG. 5 is a perspective view of molded top and bottom half portions of a nested toy removed from the heated wood press mold of FIGS. 3 and 4;

[00011] FIG. 7 is a perspective view of an assembled nested toy shell body formed in the process depicted in FIGS. 3, 4 and 5;

[00012] FIG. 7 is a perspective view of an open pair of mold halves, showing cavities in the bottom half and projections in the top half, for pressing wood powder and resin to form portions of water resistant nested toy figures;

[00013] FIG. 8 is a front view of the pressed together mold halves with pressure and heat applied to cure or vulcanize the wood and resin to form water resistant nested toy portions;

[00014] FIG. 9 is a perspective view of molded quarter portions of a nested toy removed from the heated wood press mold of FIGS. 7 and 8 and having water resistant glue applied to join the top quarter portions to form a top half and to join the bottom quarter portions to form a bottom half of the nested toy figure;

[00015] FIG. 10 is a perspective view of the nested toy shell body formed in the process depicted in FIGS. 7, 8 and 9;

[00016] FIG. 11 is a perspective view of a set of nested toys figures and in particular a plurality of sports personalities;

[00017] FIG. 12 is a perspective view of a metal plate cylinder, a rubber blanket cylinder, a compression cylinder and a sheet of plastic material onto which images from the plate cylinder are ultimately printed in a process according to one embodiment of the present invention;

[00018] FIG. 13 is a schematic side view of a plurality of rotary offset printing heads each used as in FIG. 12 to print overlapping images onto the plastic sheet so that multiple colors provide a total image for application to nested toy figures according to one embodiment of the invention;

[00019] FIG. 14 is a schematic depiction of the printed plastic sheet cut into separate strips for the separate nested toy figures and then trimmed to the proper size for wrapping around the different size nested toy figures;

[00020] FIG. 15 is a schematic perspective depiction of a top half of a nested toy figure, wrapped with an image printed on a plastic sheet as in FIG 14, and having heat applied to sealingly shrink the plastic image onto the nested toy figure according one aspect of the invention;

[00021] FIG. 16 is a schematic side view depiction of an alternative method for printing images on nested toy figures, including a pad printing process by which multiple colors of water resistant paint or ink are synchronously stamped onto a nested toy figure for applying a consistently identical likeness of a celebrity onto the curved exterior surface;

[00022] FIG. 17 is a perspective view of a plastic injection molding apparatus with multiple cavities for molding portions of nested toy figures according to one alternative embodiment of the invention;

[00023] FIG. 18 is a perspective view of top and bottom portions of a nested toy figure molded of plastic according to the alternative embodiment of FIG.17;

[00024] FIG. 19 is a perspective view of an assembled nested toy figure formed of portions molded of plastic according to the alternative embodiment of FIG.17; and

[00025] FIG. 20 is a front assembly view of a nested toy figure formed of top And bottom portions and further showing one embodiment of a method of securing to the exterior surface of the nested toy figure, sports personality depictions, sports team numbers and logos, and molded raised features.

Detailed Description of the Illustrative Embodiments

[00026] It has been found that major difficulties result when trying to mass-produce nested toy figures or nested Russian dolls on a rapid timetable. Particularly, it has been found to be expensive to allow adequate time to dry the raw wood or extra expense to kiln dry the wood. Also, kiln drying can cause a significant percentage of the raw wood to split, thereby increasing the cost of production. After the wood is lathe cut and painted to form the desired nested toy figures or dolls, the wood can still be susceptible to absorption of moisture and other fluctuations of moisture content during shipping.

Similar fluctuations in the moisture content can occur and while the nested toy figure is on display for sale or in the possession of the purchaser. Warping and splitting can result in wood from such moisture fluctuations and in particular form the wood drying too quickly. The splitting is clearly undesirable. Also, because of the required close fit required to hold the halves of the nested toy figures together and because of the close fit required between successively nested toy figures, warping can interfere with proper functioning and nesting. Moreover, certain methods of applying depictions of people, characters, animals and etc. to the exterior of the nested toy figures have also been found to be susceptible to, and adversely affected by, the absorption of moisture into lathe cut wooden dolls.

[00027] According to one aspect of the invention the nested toy figures are manufactured from a mixture of processed wood powder and waterproof resin. A press mold cavity is formed between upper and lower mold halves to produce the desired shape of a portion of the nested toy figure. The mold halves are separated and the cavity is filled with a mixture of wood powder and resin. The two mold halves are pressed together and heated to cure the wood resin mixture into a waterproof form or shell portion. A top half of the nested figure is formed in one cavity of the press mold and a bottom half is formed in another cavity of the press mold. The top and bottom are sized and shaped so that they can be connected together by a hand press fit at a part-line, thereby forming the shell body of the nested toy figure.

[00028] FIG. 1 shows a side view of a pressed wood and resin molded into a nested toy figure 12. There is a top shell half 12A and a bottom shell half 12B that are attached together with a hand press friction fit along a part-line C. The nested toy figure 12 is shown prior to applying the coloring or painting to depict the likeness or image of a sports personality or other celebrity. Each nested toy figure 12, is in the form of a hollow pressed shell that is sized so that other nested toy figures of sequentially smaller sizes will fit into the next larger size nested toy figure 12. As will be understood, the nested toy figure 12, as shown in FIG. 1, is an example of one of a set of a plurality of hollow nested toy figures. Thus, each nested toy figure 12 of a set of nested toy figures

will be nested into a next successively larger nested toy figure, so that the entire set fits into the largest one of the nested toy figures in the set. The toy figure 12, as depicted and as described herein, is representative of any of the plurality of nested toy figures in a set.

[00029] In one embodiment, the hollow nested toy figure 12 is made of a mixture of wood and resin that has been pressed and cured under heat and pressure to form a desired size and shape shell body. A depiction of a likeness of a sports personality is applied to the exterior surface of the shell body. The use of pressed wood and resin to form the shell body of the nested toy figure 12 provides resistance to moisture absorption and moisture content fluctuation and provides resistance to splitting and warping.

[00030] FIG. 2 shows raised features 13. The raised features 13 are shaped and contoured to represent any of a variety of features. For example, on a figure depicting as sports personality, the raised feature can include an arm 14, a sleeve 16, a collar 18 and a ball 20. The use of the pressed and molded structure permits the formation of such features that are not practical to form using prior methods such as lathe cutting. While other alternative methods of forming the raised features 13 might be used as discussed below, such raised features can be conveniently molded separate from the molded shell halves 12A and 12B of the nested toy figure 12. The molded raised features are adhered to the exterior of the nested toy figure 12. Where the raised feature 13 spans a part-line C, it is molded in two or more pieces such as 14A and 14B for the arm 14, 16A and 16B for the sleeve 16 and 20A and 20B for the ball 20. The raised features 13 may also be formed in one piece. For example the collar 18 can be molded as a single piece that is placed around the nested toy figure 12 and adhered in a desired location. Alternatively, the collar 18 can be formed in two molded pieces 18X and 18Y that are adhered adjacent to each other to form a collar 18.

[00031] According to one aspect of the invention the nested toy figures 12 are manufactured from a mixture 32 of processed wood powder 34 and waterproof resin 36.

A press mold cavity 33 is formed between upper 25 and lower 23 mold halves to produce the desired shape of a portion of the nested toy figure 12. The mold halves are separated and the cavity 33 is filled with the mixture 32 wood powder and resin. The two mold halves are pressed together and heated to cure the wood resin mixture 32 into a waterproof shell portion. A top half 12A of the nested toy figure 12 is formed in one cavity of the press mold and a bottom half 12B is formed in another cavity of the press mold. The top 12A and bottom 12B are sized and shaped so they can be connected together by hand press fit at a part-line C, thereby forming the full shell of the nested toy figure 12.

[00032] An example of a molding process, according to one aspect of the invention is schematically depicted in FIG. 3. An opened, wood pressing mold 21 is shown having a pair of mold halves 23 and 25. Mold cups 27a, 27b, 27c and 27d are formed in the bottom mold half 23 and projections 29a, 29b, 29c and 29d are formed in the top mold half 25. When closed the mold cups 27 and the mold projections 29 form a cavity 33 in the shape of the portion of the nested toy figure to be molded. A mixture 32 of wood powder 34 and resin 36 is formed from processed wood, saw dust or wood chips mixed together with a resin 36. A quantity of the wood powder and resin mixture 32 sufficient to fill the cavities 33 is poured as at 31 or otherwise placed into the mold cups 27. The mold halves 23 and 25 are provided with means for applying heat such as heating elements 37 and 39, respectively.

[00033] After the mold cups 27 are filled with the mixture 32 of wood and resin, the top half 23 of the mold 21 is aligned with the bottom half 25 and they are pressed together. Heat is applied, as with electrical power 41 and 43 connected to electrical heating elements 37 and 39.

[00034] FIG. 4 is a schematic depiction of the pressed together mold halves 25 and 27. The applied pressure is schematically depicted as opposed force arrows 45 and 47. The pressure and heat are applied and held for the required time period to cure or

vulcanize the wood and resin mixture 32 within the cavities 33, to thereby form water-resistant nested toy portions.

[00035] As may be understood with reference to FIG. 5, the wood powder and resin mixture 32 cures to form molded water-resistant portions of nested toy figures. In FIG. 5 there is a schematic depiction of a molded top half 12A and a molded bottom half 12B of a nested toy figure 12. The top and bottom halves 12A and 12B are removed from the heated wood press mold 21 of FIGS. 3 and 4. The top half 12A is connected by hand press fit to the bottom half 12B to form the shell body of the nested toy figure 12.

[00036] FIG. 6 is a schematic depiction of the nested toy shell formed in the process depicted in FIGS. 3, 4 and 5. Greater details of the fully formed nested toy figure 12 can be had with reference again to FIGS. 1 and 2 above.

[00037] An example of a molding process, according to another alternative embodiment of the molding of the invention is schematically depicted in FIG. 7. An opened, wood pressing mold 22 is shown having a pair of mold halves 24 and 26. Mold cups 28a, 28b, 28c and 28d are formed in the bottom mold half 24 and mold projections 30a, 30b, 30c and 30d are formed in the top mold half 26. When closed the mold cups 28 and the mold projections 30 form cavities 35 in the shape of the portion of the nested toy figure to be molded. A mixture 32 of wood powder 34 is formed from processed wood, saw dust or wood chips mixed together with a resin 36. A quantity of the wood powder and resin mixture 32 sufficient to fill the cavities 35 is poured or otherwise placed into the mold cups 28. The mold halves 24 and 26 are provided with means for applying heat such as heating elements 38 and 40, respectively.

[00038] After the mold cups 28 are filled with the requisite quantity of the mixture 32 of wood and resin, the top half 24 of the mold 22 is aligned with the bottom half 26 and the top and bottom mold halves are pressed together. Heat is applied, as with electrical power 42 and 44 connected to electrical heating elements 38 and 40.

[00039] FIG. 8 is a schematic depiction of the pressed together mold halves. The applied pressure is schematically depicted as opposed force arrows 46 and 48. The pressure and heat are applied and held for the required time period to cure or vulcanize the wood and resin and to thereby form water-resistant nested toy portions.

[00040] As may be understood with reference to FIG. 9, the wood powder and resin cure to form molded portions of water-resistant nested toys. In FIG. 9 there is a schematic depiction of molded quarter portions 50 and 52 that form a top half 12A and 54 and 56 that form a bottom half 12B of a nested toy 12. The quarter portions 50, 52, 54, and 56 are removed from the heated wood press mold of FIGS. 7 and 8. A water-resistant glue 58 is applied at 60 to the edges of the quarter portions and they are glued together to join the top quarter portions 50 and 52 to form a top half 12A. The glue 58 is also applied to join the bottom quarter portions 54 and 56 together to form a bottom half 12B of the nested toy figure 12.

[00041] FIG. 10 is a schematic depiction of the nested toy shell formed in the process depicted in FIGS 7, 8 and 9. The top 12A and bottom 12B shell halves are sized and shaped so they can be connected together by hand press fit at a part-line C, thereby forming the full shell body of the nested toy figure 12. Greater details of the formed figure 12 can be had again with reference back to FIGS 1 and 2.

[00042] According to one aspect of the present invention the nested figure concept has been uniquely applied to nested likenesses of celebrities and preferably sports personalities. In particular the concept has been applied to nested likenesses in a set of sports personalities to form a set of team members for a given team or franchise. For example, the starting lineup for a basketball team could be depicted and sold together as a unit of nested figures sized from the largest center, the forwards, and the generally smaller guards. Other sports teams might also be nested according to physical sizes of players or even stature of reputation such as a most valuable player, or even a celebrity coach. Celebrities, such as a cast of players or characters in a movie or television

show, or the members of a popular band or singing group might be similarly nested with the likeness of one member within the next.

[00043] Fig. 11 shows an example of a set 110 of nested toy figures 112, 114, 116, 118, 120, and 122. The nested toy figures are each formed of a thin wooden shell body and each nested toy figure includes a top half A and a bottom half B, detachably connectable to each other at a hand press fit part-line C or seam C. Each of the nested toy figures 112, 114, 116, 118, and 120 in the set 110 is smaller than the next preceding toy figures 114, 116, 118, 120, and 122, respectively, so that the entire set maybe nested one within the other. Such nested toys are sometimes known as "Russian " dolls. In the present invention however it is desirable to provide a likenesses 113, 115, 117, 119, 121 and 123 of sport figures or another celebrities on the normally painted exterior surface of each toy. It is also desirable to keep each of the likenesses for a given sports personality or celebrity the same in all of the sets. It has been found that due to moisture that may have been absorbed into the wooden shell, printing the likenesses on a paper laminate adhered to the surface of the toys, can result in bubbling or peeling. To overcome this adverse situation, one alternative of the present invention provides a method of printing a likeness on a plastic sheet that is then wrapped, and laminated as by shrinking the plastic sheet with heat onto the wooden shells.

[00044] With reference to Fig. 12 certain aspects of the present inventive method can be more fully understood. Fig. 12 shows a schematic exemplary depiction of cylinders only of a rotary offset printing press that might be used in the present invention. Other presses such as web presses might also be used without departing from certain aspects of the invention. In this example, a photo-receptive printing plate 130 is provided onto which images 133, 135, and 137 (corresponding in this example to likenesses 113, 115 and 117 of Fig 7) are formed. Photolithographic techniques are used and are adapted to print the image onto a plastic sheet 144 instead of on paper. The plastic sheet is secured to the cylindrical surface of a plate cylinder 138. A blanket cylinder 140 having a rubber surface 142 receives images transferred from the metal plate 130 through rolling contact with plate cylinder 138. The images are further transferred to the sheet

of plastic material 144 fed between the blanket cylinder 140 and an impression cylinder 146. Thus, the images from the plate cylinder are ultimately printed onto the plastic sheet in a process according to the present invention. It will be understood that only a single stage of a multi color printing process is depicted. The images 133, 135 and 137 are formed with one color component of the entire likenesses 113, 115 and 117, printed at a tie. Subsequent color components of the images will be printed at the overlapping locations as necessary to form a completed color image in a multi-color printing process.

[00045] FIG. 13 shows a plurality of rotary offset printing heads 150, 152, and 154, each used as in FIG. 12, to print overlapping images onto the plastic sheet 144 so that multiple colors provide total images 153, 155 and 157. The printed images become the likenesses 113, 115 and 117 when applied to the exterior shell of the nested toy figures 12.

[00046] FIG. 14 is a schematic depiction of the plastic sheet 144 that has been formed in to a printed plastic sheet 160. The printed plastic sheet 160 is then cut at 162 into separate strips 163, 165 and 167 for the separate nested toy figures 112, 114, and 116. The strips 163, 165 and 167 are then trimmed at 170 to the proper sizes 173, 175 and 177 for wrapping around the different size figures 112, 114 and 116. Although only a representative sample of three images are depicted it will be understood that any number of strips may be formed in similar process to obtain the total desired number and sizes of figures for a larger or smaller set of nested toys.

[00047] FIG. 13 depicts a schematic exemplary depiction of a top half of a figure 112A, wrapped with a strip 161 of plastic printed sheet 160. The strip 161 may be secured to itself with an adhesive as at 164, 166, and 168 and applied to the toy. This might be applied by adhesion but is advantageously by heat 180. Although the heat 80 is shown provided by a blower type heating device 182 for ease of schematic depiction, any number and variety of other heating devices such as convection ovens or conveyor

ovens may also be used to sealingly shrink the plastic sheet and image onto the toy figure.

[00048] FIG. 12 shows a schematic depiction of one preferred embodiment of a pad printing process 200, by which multiple color pad printers 202, 204, 206, and 208, apply that image to the surface of the toy figure 12. The multiple color printers use compressible or rubberized printing pads 212, 214, 216, and 218 that receive one color of paint or ink for the image desired. The printing pads, in turn, apply the received image, to the surface of the toy figure 12 with reciprocating actions 220a-d. Each of the multiple colors is made of water-resistant paint or ink and each color is synchronously stamped on the same location 221 of a nested toy figure 12. In the embodiment shown the nested toy figure 12 is moved in a holder 223 from one registered print location 222 to another location 224 and another 226 and another 228 each aligned with a respective printing pad. In the holder 223 the toy figure 12 may be held at the desired angle so the same location 221 for printing the feature is parallel with the printing pads. It will be understood that the pads will receive a fresh image between each imprint. It will further be understood that the toy figure 12 might be held stationary and the print pads moved into the registered position for printing on the stationary toy figure 12, without departing from certain aspects of the invention. Using the combination of the different color dispensing printing pads an identical likeness is consistently applied onto the curved surface of each a nested toy figure according to this aspect of the present invention.

[00049] The features that are not pad printed or otherwise mechanically applied for uniformity, can be had painted quickly and rapidly by production works. While this hand painting of jerseys and hair and other non-individualistic features might be painted before the individualistic features are applied. It has been found to be beneficial for blending of the entire likeness, to paint the non-individualistic features after the pad printing or other application of the individualistic features such as the face and player number.

[00050] It will also be understood that uniformity of the likeness of the facial features is normally the focus of prior approval of the likeness of sports personalities, celebrities and their agents, that will appear of the nested toy figure. In one embodiment of the invention much of the depiction is hand painted or otherwise painted, as for example, clothing, team names and accessories, such as balls, bats, clubs or the like. Only the face or head of the celebrity is printed. As indicated in the alternative embodiments discussed above, the approved facial depiction may be printed on the plastic material and then applied to the face of the otherwise hand painted shell body of the nested toy figure or may be printed directly onto the shell body by PAD printing.

[00051] According to one aspect of the invention as schematically depicted in FIGS. 17, 18 and 19, nested toy figures 312 are manufactured from injection molded plastic material 316. A plastic material 316, known as ABS (Acrylonitrile Butadiene Styrene), has been found to be useful for this purpose. An injection mold 318 having a cavity 320a or a plurality of cavities 320a-f formed therein is used. Mold halves 322 and 324 are depicted closed together to produce the desired shape cavities 320a-f for portions of the nested toy figures. The mold halves are held together and the cavities are filled with melted plastic material 116. When the melted plastic 116 cools and solidifies, the two mold halves 322 and 324 are separated and the molded portions are removed. Top portions 312A and bottom portions 312B of the nested toy figures are separately molded.

[00052] In one alternative embodiment the top and bottom portions are formed with more than one portion. For example two top quarter portions are separately molded and glued together to form a top half and two bottom quarter portions are molded and then glued together to form a bottom half (similar to the quarter portions depicted in FIG. 9 above). If required, the glued seams may be appropriately smoothed. The resulting nested toy figure is uniformly shaped and unaffected by moisture. No warping or cracking occurs and a plurality of closely fitting nested toy figures 312 are produced that will hold their shape during shipping and display.

[00053] According to another aspect of the invention, the nested toy figures are formed with raised or indented or relief features such as arms, hands, collars, balls, bats and other appropriate features. The mold cavities may be formed to include such features 321c and 321d molded directly onto the top and bottom body portions of the toy figures 312, as illustrated in FIG. 17 at cavities 320c and 320d. The resulting features are shown in FIG. 19. These features are not practically formable using prior lathe cutting processes for forming nested dolls, yet they are formable using the plastic injection molding procedure according to this alternative aspect of the present invention. Moreover, the formed features will retain their shape without warping and cracking due to moisture so that the nesting of the figures continues to be functional through a long life of the nested toy figures.

[00054] According to another aspect of the invention, protrusions and relief for raised features such as arms, hands, collars, balls, bats and other appropriate features, may be separately press molded. For example such features may be molded using wood and resin mixture, as illustrated in FIG 3 at cavities 30e-30h and 28e-28f. The features are subsequently permanently glued or adhered to a press molded figure body.

[00055] Alternatively, according to another aspect of the invention, illustrated also in FIGS. 17 and 19, plastic raised features 330 such as arms 321e and 321f are separately injection molded, at mold cavities 320e and 320f.

[00056] FIG. 20 shows a shell body of a nested toy figure 12 (or 312) that may be pressed and molded wood and resin (or injection molded plastic.) To the exterior surface 340 raised features 13 are adhered. These raised features may be pressed wood and resin features, such as 14, 16, 18 and 20 of FIGS.2 and 9 (or molded plastic features 321e-f of FIG. 19.) For purposes of discussion examples are renumbered in FIG.20 as arms 332R and 332L, hands 334R and 334L, ball 336. Other appropriate features may also be formed and adhered to the exterior surface 340 as described herein. The raised features 332, 334 and 336 are then permanently glued or adhered at 342, 344, and 346, to the nested toy figure 12. It will be understood that different

combinations of materials can be used without departing from certain aspects of the invention. For example, the shell body may be formed of a pressed wood and resin and the raised features could be formed of pressed wood and resin or the raised features may be formed of plastic. Alternatively, the shell body may be formed of plastic and the features may be either injection molded plastic or pressed wood and resin.

[00057] FIG. 20, shows a method of applying a depiction of the likeness 113 of a sports personality or other celebrity. Each nested toy figure 12, is in the form of a hollow shell that is sized so that other nested toy figures of sequentially smaller sizes will fit into the next larger size nested toy figure 12. As will be understood, the nested toy figure 12, as shown in FIG. 1, is an example of one of a set of a plurality of hollow nested toy figures. Thus, each nested toy figure 12 of a set of nested toy figures will be nested into a next successively larger nested toy figure, so that the entire set fits into the largest one of the nested toy figures in the set. The toy figure 12, as depicted and as described herein, is representative of any of the plurality of nested toy figures in a set.

[00058] A depiction of a sports personality 113 is produced using a computer controlled multi color ink/paint printer. The ink/paint image 350 is sprayed in a continuous layer on paper 352 that is coated with a thin layer 354 of dried glue or adhesive. The dried glue or adhesive is of a type that can be reconstituted with water or another liquid, as for example of a type those skilled in the art will understand is used for decals on toy models and the like. The printed ink/paint image dries to form a moisture impermeable image 350, on the coated paper, in the form of a continuous thin ink/paint sheet in the likeness 113 of the sports personality. The paper is then placed face down on the exterior surface 340 at 356 of the nested toy figure 12 (or 312), water is applied to the back of the paper 352, the glue 354 is reconstituted to a fluid and the ink/paint image 350 is transferred from the paper 352 to the surface 340 at 356 of the nested toy figure 12(or 312). The ink/paint image 350 is smeared with the reconstituted glue 352. Any bubbles or non-conformities are smoothed onto the exterior surface of the nested toy figure and the image 350 is allowed to dry in place at 356. Player numbers, team logos, and lettering can be applied to the exterior surface 340 of the

nested toy figure 12 (or 312) using preprinted decals, such as decal 360 applied at 362. Other features such as clothing, hair and other visual features can be cost effectively applied by hand painting, spray painting, or other routine or machine automated manner.

Variations and Equivalents

[00059] It is understood that variations may be made in the foregoing without departing from the scope of the invention. For example, terms with directional connotations such as base, top, upper, lower, outer, and inner are used in context for purposes of relative positions and the device need not be limited to absolute directions in order to fall within the scope of the invention described and claimed. While various features and embodiments are described in certain combinations and sub-combinations, selected features from one embodiment may be combined with features of other embodiments, without departing from certain aspects of the invention.

[00060] According to another alternative aspect of the invention, more than one portion may be used to form each of the top and bottom portions of the desired shape figure. For example as shown in FIG. 9 two top quarters may be separately molded and glued together to form a top half and two bottom quarters may molded and be glued together to form a bottom half. The glued seams are appropriately smoothed. The resulting nested toy figure is thus uniformly shaped and unaffected by moisture so that no warping or cracking occurs and a plurality of closely fitting nested figures are produced that will hold their shape.

[00061] According to another alternative aspect of the invention, the figures may be formed with protrusions and relief for features such as arms, hands, collars, balls, bats and other appropriate features. These features are not practically formable using prior lathe cutting processes for forming nested dolls, yet they are formable using the wood and resin mold pressing procedure according to this alternative aspect of the present invention. Moreover, the formed features will retain their shape without warping and

cracking due to moisture so that the nesting of the figures continues to be functional through a long life of the nested toy figures.

[00062] According to another alternative embodiment of the invention the nested figures are manufactured from injection molded plastic. A plastic material known as ABS (Acrylonitrile Butadiene Styrene) has been found to be useful for this purpose. An injection mold cavity is formed with mold halves having cavities to produce the desired shape of a portion of a desired nested toy figure. The mold halves are held together and the cavity is filled with liquid ABS. When the liquid ABS cools and solidifies, the two halves are separated and the molded portion of the nested toy figure is removed. Top portions and bottom portions of the nested toy figures are separately molded. If more than one portion is required for each of the top and bottom portions of the desired shape figure, two top quarters may be separately molded and glued together to form a top half and two bottom quarters may molded and be glued together to form a bottom half. If required, the glued seams may be appropriately smoothed. The resulting figure is thus uniformly shaped and unaffected by moisture so that no warping or cracking occurs and a plurality of closely fitting nested figures are produced that will hold their shape.

[00063] According to another alternative aspect of the invention, protrusions and relief for features such as arms, hands, collars, balls, bats and other appropriate features, may be integrally press molded with the shell portions of the molded nested toy figures. Thus, a wood and resin mixture is used in a press mold having the features formed in the cavities and on the protrusions of the mold. The features are formed at the same time as the top and bottom shell portions of the nested toy figures are formed. Additional clearance is provided between each size of the nested toy figures. Care is also taken to form the features in the mold cavities with appropriate relief to allow removal of the shell portions from the mold.

[00064] According to another alternative aspect of the invention, the nested toy figures may be formed integrally with the molded shell portions using the plastic injection molding procedure with or without protrusions and relief for features such as

arms, hands, collars, balls, bats and other appropriate features. The formed features will retain their shape without warping and cracking due to moisture so that the nesting of the figures continues to be functional through a long life of the nested toy figures.

[00065] Alternatively, according to another aspect of the invention, protrusions and relief for features such as arms, hands, collars, balls, bats and other appropriate features, may be separately injection molded using plastic such as ABS and subsequently permanently glued or adhered to an injection molded nested toy figure. In one alternative embodiment, plastic molded features are glued to press molded nested toy figures. In another alternative embodiment, press molded features may be glued to injection molded plastic nested toy figures.

[00066] According to another aspect of the invention, a method of manufacturing the figures so that each individual celebrity or sports personality depicted appears substantially identical on every doll sold with the likeness. Mass marketing of the nested toy figures is facilitated because the individual or team that might have the rights publicity or the rights to the personality need only pre-approve one depiction. One method is to obtain an artist rendition and then print the likeness on to a paper laminate that can be adhered to the exterior surface of the figure shells. While this process overcomes some of the concerns with making each rendition the same, another difficulty has been discovered with the product resulting from this process. In particular moisture has been found to adversely affect the paper laminate so that bubbling, and peeling can result. This is particularly a concern where the nested figures are more economically produced in one country and then they are shipped via sea carrier to another country for sale.

[00067] According to yet another aspect of the invention, a method of manufacturing nested toys depicting the likeness of celebrities and sports personalities is provided by using photolithography techniques to produce the image on a photo sensitive metal plate secured to a plate cylinder of a rotary offset printing press. The image is transferred in the printing plate onto a rubberized surface blanket cylinder and then

printed onto a thin plastic film. The plastic film is then adhered to the exterior surface of the figure shells so that it is resistant to the adverse affects of moisture.

[00068] According to another aspect of the invention, a plastic film, on which the likeness of a celebrity or sports personality is printed, is made of a special heat shrinkable plastic material. The ink or coloring used in the printing process is of a type that is not adversely affected by the amount of heat used to shrink the film. The printed plastic film is wrapped and secured along an overlapping seam and then is adhered to the surface for moisture resistance by subjecting the film to an appropriate amount of heating as by passing the toy through an elevated temperature. For speed of manufacture a conveyor oven similar to the type as may be used in many mass-produced heating or cooking processes may be used for this purpose. While the plastic film and the heat shrinkable film and process of applying the plastic film to nested toy figures overcomes some of the difficulties discovered, the processes can be expensive, it is never-the-less an alternative to the pad printing described in connection with the description of the invention above.

[00069] Thus, according to an exemplary embodiment, the faces, and any other features that are desirably identical, such as jersey numbers and team emblems, are pad printed. The pad printing may be done with a multiple color, pad printing device, similar to an offset printing process where multiple colors are printed synchronously. For example the multiple color printing may be accomplished by printing a plurality of registered dots of color or registered features to produce a full color likeness of the face of the figure. Other features such as, logos, numbers or lettering may also be printed. In this process, it has been found that the entire depiction need not be pad printed. Selected parts of the likeness may require special uniformity, such as the face or a team logo, and these features are pad printed. Other features that do not require complete uniformity, such as hair and jerseys, are economically hand painted by production factory painters or are otherwise applied without the need to provide complete uniformity.

[00070] It will be understood that different combinations of materials can be used without departing from certain aspects of the invention. For example, the shell body may be formed of a pressed wood and resin and the raised features could be formed of pressed wood and resin or the raised features may be formed of plastic. Alternatively, the shell body may be formed of plastic and the features may be either injection molded plastic or pressed wood and resin.

[00071] Although illustrative embodiments have been shown and described, a wide range of modification, change and substitution is contemplated in the foregoing disclosure and in some instances, some features of the embodiments may be employed without a corresponding use of other features. Accordingly, it is appropriate that the invention be construed broadly and in a manner consistent with the scope of the embodiments disclosed herein.